UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/243,030	02/03/1999	MICHAEL GERARD TOVEY	23164-1001-D	1869

1444 7590 10/04/2007

BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

EXAMINER	
ANDERSON, JAMES D	

ART UNIT	PAPER NUMBER
1614	

MAIL DATE	DELIVERY MODE
10/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/243,030	TOVEY, MICHAEL GERARD	
	Examiner	Art Unit	
	James D. Anderson	1614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

CLAIMS 22-58 ARE PRESENTED FOR EXAMINATION

Applicants' amendment filed 7/5/2007 has been received and entered into the application. Accordingly, claims 22-24, 36-37, 39-40, and 52 have been amended and claim 58 has been added.

Applicants' arguments, filed 7/5/2007, have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Claim Rejections - 35 USC § 112 – 2nd Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22-58 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 36, 52, and 58 recite the limitation "an effective amount of greater than 0.28 x 10^6 IU of interferon per kg body weight". Claim 37 recites "an amount of greater than 30 x 10^6 IU". However, the claims also recite the limitation wherein "said amount being in excess of an amount of the same interferon which induces a pathological response when parenterally administered". If 40 x 10^6 IU interferon induces a pathological response when parenterally administered, must the dose in the present claims be greater than 40 x 10^6 IU? The limitation "said amount being in excess of an amount of the same interferon which induces a

pathological response when parenterally administered" appears to be redundant because the limitations "greater than 0.28 x 10^6 IU per kg body weight" and "an amount of greater than 30 x 10^6 IU" define the dose being administered. However, the claimed doses also render the claims indefinite because it is not clear if the claimed dose limitations are referring to a total daily dose or per administration dose. For example, dependent claims recite administration in both a single administration as well as administration in multiple doses. Accordingly, the doses recited in the claims could reasonably be interpreted as single administration doses (*i.e.*, single administration) as well as a total daily doses (*i.e.*, administered *via* multiple administrations of a lower dose).

Claims 36 and 38-51 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 36 recites the broad recitation "oromucosal contact", and the claim also recites

"intranasally" which is the narrower statement of the range/limitation. In addition, similar to the discussion supra, the recitation of a dose "greater than 0.28 x 10^6 IU per kg body weight" or "greater than 30 x 10^6 IU" interferon followed by the limitation "said amount being in excess of an amount of the same interferon which induces a pathological response when parenterally administered" also appears to be a broad limitation followed by a narrow limitation.

Claim Rejections - 35 USC § 112 (1st Paragraph)

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 22-58 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for treating a rhinoviral infection with recombinant interferon-α_2, does not reasonably provide enablement for treating any and all viral infections *via* oromucosal administration of any interferon. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. This is a Scope of Enablement rejection.

To be enabling, the specification of the patent application must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Explaining what is meant by "undue experimentation," the Federal Circuit has stated that:

> The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in

> question provides a reasonable amount of guidance with respect to the direction in which experimentation should proceed to enable the determination of how to practice a desired embodiment of the claimed invention. PPG v. Guardian, 75 F.3d 1558, 1564 (Fed. Cir. 1996).[1]

The factors that may be considered in determining whether a disclosure would require undue experimentation are set forth by *In re Wands*, 8 USPQ2d 1400 (CAFC 1988) at 1404 wherein, citing *Ex parte Forman*, 230 USPQ 546 (Bd. Apls. 1986) at 547 the court recited eight factors:

1) the quantity of experimentation necessary,

2) the amount of direction or guidance provided,

3) the presence or absence of working examples,

4) the nature of the invention,

5) the state of the prior art,

6) the relative skill of those in the art,

7) the predictability of the art, and

8) the breadth of the claims.

These factors are always applied against the background understanding that scope of enablement varies inversely with the degree of unpredictability involved. *In re Fisher*, 57 CCPA 1099, 1108, 427 F.2d 833, 839, 166 USPQ 18, 24 (1970). Keeping that in mind, the *Wands* factors are relevant to the instant fact situation for the following reasons:

---

[1] As pointed out by the court in *In re Angstadt*, 537 F.2d 498 at 504 (CCPA 1976), the key word is "undue", not "experimentation".

1. The nature of the invention, state and predictability of the art, and relative skill of those in the art

The invention relates to the treatment of viral infections, including hepatitis, HIV, herpes, and influenza comprising oromucosal administration of an interferon.

The relative skill of those in the art is high, generally that of an M.D. or Ph.D. The artisan using Applicant's invention would generally be a physician with a M.D. degree and several years of experience.

That factor is outweighed, however, by the unpredictable nature of the art. It is well established that "the scope of enablement varies inversely with the degree of unpredictability of the factors involved", and physiological activity is generally considered to be an unpredictable factor. See *In re Fisher*, 166 USPQ 18, at 24 (In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved.), *Nationwide Chemical Corporation, et al. v. Wright, et al.*, 192 USPQ 95 (one skilled in chemical and biological arts cannot always reasonably predict how different chemical compounds and elements might behave under varying circumstances), *Ex parte Sudilovsky* 21 USPQ2d 1702 (Appellant's invention concerns pharmaceutical activity. Because there is no evidence of record of analogous activity for similar compounds, the art is relatively unpredictable) *In re Wright* 27 USPQ2d 1510 (the physiological activity of RNA viruses was sufficiently unpredictable that success in developing specific avian recombinant virus vaccine was uncertain).

In the instant case, the claims recite limitations wherein the interferon administered *via* oromucosal contact "does not involve direct action of the interferon on virally infected cells" and

wherein "biologically active interferon does not enter the bloodstream". If a patient has, for example, hepatitis, it is not at all clear how such an infection could be treated if interferon does not act on the viral cells and does not enter the blood stream. For example, Smith *et al.* (Antiviral Res., 1987, Vol. 8, pages 239-245) teach that intranasally administered interferon, while preventing hepatitis virus from extending from the nose to the brain, does not protect against dissemination of virus to other organs. Further, and more importantly, systemic infection was not affected by intranasal interferon treatment (Abstract). Hayden *et al.* (Antimicrobial Agents and Chemotherapy, 1988, vol. 32, no. 2, pages 224-230) teach that intranasal administration of 10-MU/day or 20-MU/day of interferon-α_{2b} is not effective in treating naturally occurring common colds (Abstract). However, Hayden *et al.* (J. Infect. Dis., 1984, vol. 150, no. 2, pages 174-180) teach that intranasal administration of 27-MU/day interferon-α_2 for five days is marginally effective in treating rhinoviral infections. As such, it appears to be entirely unpredictable whether a high dose of oromucosally administered interferon, which does not directly affect viral cells and does not enter the bloodstream as a biologically active agent, will have any beneficial effect in treating any and all viral infections, especially systemic viral infections. Further still, U.S. Patent No. 7,267,827 issued to Santus *et al.* teaches that many therapeutic agents cannot be nasally administered. While Santus *et al.* do teach that B-interferon in a "special formulation" has proved suitable for nasal administration, in general, Santus *et al.* state that "the ability of drug molecules to be absorbed by the nasal mucous membranes is utterly unpredictable, as is the ability of intranasal formulations to avoid irritation of the mucous nasal membranes" (col. 2, lines 51-67).

2. The breadth of the claims

The claims are extremely broad insofar as they disclose the general treatment of any and all viral infections *via* oromucosal administration of any and all interferons. While the claims recite doses of interferon, the dose is only indicated to be "greater than" a given amount and is not limited to any particular interferon or viral infection.

3. The amount of direction or guidance provided and the presence or absence of working examples

The specification provides no direction or guidance for determining the particular administration regimens or interferons necessary to treat all of the various viral infections claimed, particularly in humans. The direction concerning treating viral infections is found in the specification at pages 21-22, which merely shows that interferon-α administered oromucosally to mice protected the mice from an EMCV infection. However, there is no data relating to the treatment of any previously established viral infections. Applicant describes formulations at page 13. Doses required to practice the invention are described at page 8. With respect to dose, it is only disclosed that the dose is greater than 0.28×10^6 IU/kg body weight and preferably greater than about 30×10^6 IU. There are no guidelines for determining the doses needed to treat a hepatitis infection *vs.* a rhinovirus infection *vs.* an HIV infection via oromucosal contact of an interferon. Are the identical doses to be used for treating these unrelated viruses? There is an *in vivo* assay described in pages 21-22 but it is unclear if this assay correlates to the *in vivo* treatment of all viral infections with all interferons as encompassed by the claims. There is no working example demonstrating the treatment of any viral infections in animals or man. The lethal challenge EMCV (encephalomyocarditis virus) assay (pages 21-22) provides evidence that

interferon-α protects mice from getting an EMCV infection. However, protection against infection does not predictably correlate to treatment of an established infection. For example, while vaccines may protect one getting an infection or disease, once the infection or disease is established, vaccines are generally useless as therapeutic treatments. Thus, there are no working examples correlating protection against an EMCV infection with efficacy in the treatment of viral infections using any and all oromucosally administered interferons.

4. The quantity of experimentation necessary

Because of the known unpredictability of the art (as discussed *supra*) and in the absence of experimental evidence commensurate in scope with the claims, the skilled artisan would not accept the assertion that oromucosal administration of interferons could be predictably used as a treatment for all viral infections as inferred in the claims and contemplated by the specification.

Genentech Inc. vs. Nova Nordisk states, "[A] patent is not a hunting license. It is not a reward for a search but a compensation for its successful conclusion and 'patent protection' is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable" (42 USPQ 2d 1001, Fed. Circuit 1997).

In the instant case, Applicant has presented a general idea that because interferon-α when administered oromucosally protects mice from an EMCV infections then all oromucosally administered interferons must therefore, *a priori*, be useful in the treatment of all viral infections. However, the claims encompass a multitude of different interferons and pathologically distinct viral infections. Applicant tested one interferon for activity in protecting mice against one type of viral infection.

Determining if any particular claimed interferon would treat any particular viral infection would require isolation and purification of the interferon, formulation it into a suitable dosage form, and subjecting it to clinical trials or to testing in an assay known to correlate to clinical efficacy of such treatment. This is undue experimentation given the limited guidance and direction provided by Applicant. For example, *in vivo* assays do not always correlate to efficacy in humans and are not generally predictive of clinical efficacy. Further, because the claimed methods require the treatment of a patient *via* administration of interferons through a specific route of administration, to test the efficacy of the claimed methods necessarily requires *in vivo* animal testing or human clinical trials. *In vitro* screening methods cannot be used to determine which interferons might be effective in treating any particular viral infection via oromucosal administration.

Accordingly, the instant claims do not comply with the enablement requirement of 35 U.S.C. § 112, first paragraph, since to practice the claimed invention a person of ordinary skill in the art would have to engage in undue experimentation, with no assurance of success. While the skilled artisan would reasonably expect a rhinoviral infection to be treatable *via* oromucosal contact of an interferon (see references discussed below), the skilled artisan would not reasonably expect any and all systemic viral infections to be treatable *via* a method of administration that leads to biologically active interferon not entering the bloodstream and not acting on virally infected cells.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 36, 39-43, 46-47, and 49-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayden *et al.* (J. Infect. Dis., 1984, vol. 150, no. 2, pages 174-180) (newly cited).

Instant claim 36 has been amended such that the limitation "wherein the interferon is administered intranasally" has been added. Further, the limitation "provided that when the viral infection is a rhinoviral infection, the interferon is not delivered through the mouth in a multiple of continuous dose" has been deleted. The instant claims recite a method of treating a viral infection comprising administering "greater than 0.28×10^6 IU of interferon per kg body weight of the patient" interferon. As noted *supra*, the claims are unclear as to whether the administered dose is a total daily dose or a single administration dose. For the purposes of this rejection, the claims are interpreted as administration of a total daily dose of greater than 0.28×10^6 IU of interferon per kg body weight of the patient.

Hayden *et al.* teach intranasal administration of 9×10^6 IU HuIFN-2α three times per day for five days to patients having rhinoviral infections (Abstract). The total daily dose is equivalent to 27×10^6 IU interferon, thus meeting the instantly claimed limitation of greater than 0.28×10^6 IU of interferon per kg body weight of the patient. Administration three times per day for five days meets the limitation of claim 39 wherein the interferon is administered in a plurality

of smaller amounts over a period of time as well as the limitation "...interferon is delivered continuously over a period of time..." as recited in claim 40.

Accordingly, the claims are deemed properly rejected as being anticipated by Hayden *et al.* who teach intranasal administration of interferon to treat a rhinoviral infection.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 23-27, 30-31, 33-35 and 38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayden *et al.* (J. Infect. Dis., 1984, vol. 150, no. 2, pages 174-180).

Hayden *et al.* disclose as applied to claims 36, 39-43, 46-47, and 49-51, *supra*. The instant claims differ from Hayden *et al.* in the dose of interferon being administered. For example, Hayden *et al.* teach intranasal administration of 9×10^6 IU HuIFN-2α three times per day for five days to patients having rhinoviral infections (Abstract). The total daily dose is equivalent to 27×10^6 IU interferon. However, the instant claims recite administration of greater than 30×10^6 IU interferon.

However, in the absence of a showing of unexpected results, it is well within the purview of the skilled clinician or physician to increase the dose of administered therapeutics so to optimize efficacy. In the instant case, the total daily dose of 27×10^6 IU interferon administered in Hayden *et al.* was shown to be marginally effective in treating rhinoviral infections. As such, the skilled artisan would have been imbued with at least a reasonable expectation that a dose of 30×10^6 IU interferon would also be effective in treating rhinoviral infections.

Claims 22-35 and 37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eby, III (U.S. Patent No. 5,286,748; Issued Feb. 15, 1994) (prior art of record).

The instant claims recite methods for treating viral infections comprising administering greater than 30 x 10^6 IU (claims 22-35 and 37) of an interferon *via* oromucosal contact (claim 37). Dependent claims further limit claim 37 to specific administration regimens, doses and viral infections.

Eby discloses a method of treating the common cold by administering medicaments "to and into the oral tissues" (Abstract). The invention specifically claims the utility of application of medicinal agents to the oral and oralpharyngeal mucous membranes rather than the nose or by ingestion (*id.*). The application of antiviral agents to the oral mucosa through the incorporation of said antiviral agents within a slow release lozenge has the potential to allow the medicament to absorb into the lymphatic system or otherwise circulate into the nasal tissue and the locus of the infection (col. 4, lines 9-15). Interferons are disclosed at column 5, line 44. An example of an interferon composition can comprise 1 to 20 million IU (col. 8, lines 20-22). It is noted that if a 5 gram fructose based lozenge containing 20 million IU of interferon is administered twice, a total of 40 million IU interferon will be administered, thus meeting the limitation "greater than 30 x 10^6 IU" as recited in claim 37. Further, the skilled artisan would be motivated to adjust the administration amount in consideration of individual patient response. Claim 5 of the Eby patent specifically claims treatment of the common cold comprising "often repeated administration" of an antirhinoviral medication (including interferon) that releases the medicament in the oral cavity to facilitate absorption of the medicament into the oral and oral pharyngeal membranes.

In the absence of a showing of unexpected results commensurate in scope with the claims, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to treat a rhinoviral infection *via* oromucosal administration of interferon. The differences between the claimed methods and those disclosed in Eby lie in the amount of interferon administered as well as the specific dosing regimens contemplated. However, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

In the instant case, Eby discloses the general conditions of methods for treating rhinoviral infections *via* oromucosal contact of antiviral agents. As such, the instantly claimed administration regimens, doses and specific species of interferons are not inventive over Eby. Further, it would have been obvious, given the general conditions disclosed in Eby, that higher doses of interferon could be used effectively in the methods disclosed therein. In addition, the skilled artisan would have been imbued with at least a reasonable expectation that other dosing regimens of interferon could be used to treat viral infections while maintaining efficacy. Applicant has provided no evidence that the administration regimens (*i.e.* multiple doses vs. single dose, administration through the mouth vs. nasal administration, etc.) are critical to the claimed methods and unobvious over the prior art.

Claims 36, 38-51, and 58 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eby, III (U.S. Patent No. 5,286,748; Issued Feb. 15, 1994) (prior art of record) in view of

Hayden *et al.* (Journal of Infectious Diseases, 1983, Vol. 148, No. 3, pages 543-550) (prior art of record).

Instant claim 36 has been amended such that the limitation "wherein the interferon is administered intranasally" has been added. Further, the limitation "provided that when the viral infection is a rhinoviral infection, the interferon is not delivered through the mouth in a multiple of continuous dose" has been deleted. Accordingly, a new ground of rejection is being applied as the combined references meet the limitations of the claims as presently amended.

Eby discloses a method of treating the common cold by administering medicaments "to and into the oral tissues" (Abstract). The invention specifically claims the utility of application of medicinal agents to the oral and oralpharyngeal mucous membranes rather than the nose or by ingestion (*id.*). The application of antiviral agents to the oral mucosa through the incorporation of said antiviral agents within a slow release lozenge has the potential to allow the medicament to absorb into the lymphatic system or otherwise circulate into the nasal tissue and the locus of the infection (col. 4, lines 9-15). Interferons are disclosed at column 5, line 44. An example of an interferon composition can comprise 1 to 20 million IU (col. 8, lines 20-22). It is noted that if a 5 gram fructose based lozenge containing 20 million IU of interferon is administered twice, a total of 40 million IU interferon will be administered, thus meeting the limitation "greater than 0.28×10^6 IU of interferon per kg body weight of the patient" as recited in claim 36. Claim 5 of the Eby patent specifically claims treatment of the common cold comprising "often repeated administration" of an antirhinoviral medication (including interferon) that releases the medicament in the oral cavity to facilitate absorption of the medicament into the oral and oral

pharyngeal membranes. The reference does not teach administration of the interferon intranasally.

However, Hayden *et al.* teach methods of administering interferon α2 (IFN-α2) by intranasal drops either daily or in multiple treatments (*e.g.*, four times per day for four days). It is disclosed that in 1973, frequent intranasal administration of human leukocyte-derived IFN was associated with a reduction in infection rates in volunteers challenged with rhinovirus (page 543). In the present placebo-controlled, double-blind studies, IFN-α2 was given by intranasal drops in either multiple treatments (11.4×10^4 IU four times per day for four days) or one treatment daily (42.8×10^4 IU per day for five days) (Abstract; page 544).

In the absence of a showing of unexpected results commensurate in scope with the claims, the instantly claimed methods would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made. The differences between the claimed methods and those disclosed in Eby and Hayden *et al.* lie in the amount of interferon administered as well as the specific dosing regimens contemplated. For example, Eby does not teach intranasal administration in multiple doses. Hayden *et al.* do not teach doses of IFN greater than 0.28×10^6 IU of interferon per kg body weight of the patient. However, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the instant case, Eby discloses the general conditions of methods for treating rhinoviral infections *via* oromucosal contact of antiviral agents. As such, the instantly claimed administration regimens, doses and specific species of interferons are not inventive over Eby.

Further, it would have been obvious, given the general conditions disclosed in Eby, that higher doses of interferon could be used effectively in the methods disclosed therein and that interferon could be effectively administered intranasally as taught in Hayden *et al.* In addition, the skilled artisan would have been imbued with at least a reasonable expectation that other dosing regimens of interferon could be used to treat viral infections while maintaining efficacy. Applicant has provided no evidence that the administration regimens (*i.e.* multiple doses vs. single dose, administration through the mouth vs. nasal administration, etc.) are critical to the claimed methods and unobvious over the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Anderson whose telephone number is 571-272-9038. The examiner can normally be reached on MON-FRI 9:00 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel can be reached on 571-272-0718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James D. Anderson
Patent Examiner
AU 1614

September 27, 2007

ARDIN H. MARSCHEL
SUPERVISORY PATENT EXAMINER